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PATENT APPLICATION M.L.
Q55591

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

KONG, et al.

Application No: 09/386,965 Group Art Unit: 2731

Filed: August 31, 1999 Examiner: UNKNOWN

For: METHOD AND APPARATUS FOR DETERMINING RATE OF DATA TRANSMITTED AT VARIABLE RATES

PRELIMINARY AMENDMENT

Assistant Commissioner of Patents
Washington, D.C. 20231

Sir:

Prior to examining the above-identified application, please further amend it as follows:

IN THE DRAWINGS.

Please see the enclosed Proposed Drawing Correction.

IN THE SPECIFICATION.

On page 2, line 14, delete "a'.

On page 4, line 29, delete "204" and insert --205--.

IN THE CLAIMS.

Please amend the claims as follows:

A1 emit

(Amended) A method for determining the rate of received data in a variable-rate communications system, the method comprising the steps of:

(a) pre-decoding [the received] data received at [receivable] variable data rates and detecting quality information of the [data] pre-decoded data received at the respective data rates; and

(b) estimating the rate of the received data based on the quality information of the [data] pre-decoded data at the respective data rates.

Applicants file herewith a proposed drawing correction. Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,

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2. (Amended) The method of claim 1, wherein the pre-decoding in step (a) is performed using an [a generating function for the pre-decoding in the step (a) is the] inverse function of a generating function used for encoding.

4. (Amended) The method of claim 1, further comprising the step of: [©]

(c) Viterbi decoding only the data [which corresponds] corresponding to the estimated data rate.

5. (Amended) A method for determining the rate of data received by a receiver in a variable-rate communications system, the method comprising the steps of:

(a) pre-decoding the received data at a first data rate and re-encoding the result, to output a first quality indication;

(b) comparing the received data [to] with the first quality indication, and counting the number of errors [according to] resulting from the comparison [result], to output an error metric [with respect to] for the first data rate;

[©] (c) pre-decoding the received data at a second data rate and re-encoding the result, to output a second quality indication;

(d) comparing the received data [to] with the second quality indication, and counting the number of errors [according to] resulting from the comparison [result], to output an error metric [with respect to] for the second data rate; and

(e) estimating the rate of the received data [by] using the error metrics [with respect to] determined for the first and second data rates.

6. (Amended) The method of claim 5, further comprising the step of:

(f) selecting the [data corresponding to the] estimated data rate from step (e) and Viterbi decoding only the selected data.

7. (Amended) The method of claim 5, wherein the pre-decoding in steps (a) and (c) is performed using an [a generating function for pre-decoding has the] inverse function of a generating function for encoding.

8. (Amended) The method of claim 5, further comprising the steps of:

(f) pre-decoding the received data at a third data rate and re-encoding the result, to output a third quality indication; and

(g) comparing the received data [to] with the third quality indication, and counting the number of errors [according to] resulting from the comparison [result], to output an error metric [with respect to] for the third data rate,

wherein the error metric [with respect to] for the third data rate is also compared in the estimation of the data rate in the step (e).

9. (Amended) The method of claim 8, further comprising the steps of:

(h) pre-decoding the received data at a fourth data rate and re-encoding the result, to output a fourth quality indication; and

(g) comparing the received data [to] with the fourth quality indication, and counting the number of errors [according to] resulting from the comparison [result], to output an error metric [with respect to] for the fourth data rate,

wherein the error metric [with respect to] for the fourth data rate is also compared in the estimation of the data rate in the step (e).

10. (Amended) An apparatus for determining the rate of received data in a variable-rate communications system, the apparatus comprising:

a first means for pre-decoding [the received] data received at [receivable] variable data rates and providing quality information [of] concerning the [data] pre-decoded data received at the respective data rates; and

a second means for estimating the rate of the received data, based on the quality information of the [data] pre-decoded data received at the respective data rates.

12. (Amended) The apparatus of claim 10, further comprising a Viterbi decoder for Viterbi decoding only the data [which corresponds] corresponding to the estimated data rate.

13. (Amended) An apparatus for determining the rate of data received by a receiver in a variable-rate communications system, the apparatus comprising:

a first pre-decoder for pre-decoding [the] received data having a first data rate;

a first encoder for re-encoding [the] an output from [the] said first pre-decoder;

a first comparator for comparing the data having the first data rate [to the] with an output from [the] said first encoder;

a first counter for counting the number of errors resulting from the comparison [result] of [the] said first comparator;

a second pre-decoder for pre-decoding [the] received data having a second data rate;

a second encoder for re-encoding [the] an output from [the] said second pre-decoder;

a second comparator for comparing the data having the second data rate [to the] with an output from [the] said second encoder;

a second counter for counting the number of errors resulting from the comparison [result] of [the] said second comparator; and

a decision unit for deciding [the] which [rate] of the data received [data] from said [using the outputs from the] first and second counters [and generating selection information] has the least symbol error rate.

14. (Amended) The apparatus of claim 13, further comprising a first pre-processing unit [in front of the] preceding said second pre-decoder.

15. (Amended) The apparatus of claim 14, wherein [the] said first pre-processing unit is [constructed of] implemented with a summer, a combiner or a selector.

16. (Amended) The apparatus of claim 13, further comprising:

a third pre-decoder for pre-decoding [the] data having a third data rate;

a third encoder for re-encoding [the] an output from [the] said third pre-decoder;

a third comparator for comparing the data having the third data rate [to the] with an output from [the] said third encoder; and

a third counter for counting the number of errors resulting from the comparison [result] of [the] said third comparator;

wherein [the] an output from [the] said third counter is [also applied] inputted to [the] said decision unit.

17. (Amended) The apparatus of claim 16, further comprising a first pre-processing unit [in front of the] preceding said second pre-decoder.

18. (Amended) The apparatus of claim 17, further comprising a second pre-processing unit [in front of the] preceding said third pre-decoder.

19. (Amended) The apparatus of claim 18, wherein [the] said first and second pre-processing units are [constructed of] implemented with a summer, a combiner or a selector.

20. (Amended) The apparatus of claim 16, further comprising:

a fourth pre-decoder for pre-decoding [the] data having a fourth data rate;

a fourth encoder for re-encoding [the] an output from [the] said fourth pre-decoder;

a fourth comparator for comparing the data having the fourth data rate [to the] with an output from the fourth encoder; and

a fourth counter for counting the number of errors resulting from the comparison [result] of [the] said fourth comparator;

wherein [the] an output from [the] said fourth counter is [also applied] inputted to [the] said decision unit.

21. (Amended) The apparatus of claim 20, wherein [generating functions used in the] said first through fourth pre-decoders [have the] use an inverse function of a generating function used for encoding.

22. (Amended) The apparatus of claim 20, further comprising a first pre-processing unit [in front of the] preceding said second pre-decoder.

23. (Amended) The apparatus of claim 22, further comprising a second pre-processing unit [in front of the] preceding said third pre-decoder.

24. (Amended) The apparatus of claim 23, further comprising a third pre-processing unit [in front of the] preceding said fourth pre-decoder.

25. (Amended) The apparatus of claim 24, wherein the first, second and third pre-processing units are [constructed of] implemented with a summer, a combiner or a selector.